REMARKS

Applicant has carefully considered the Final Official Action mailed July 30, 2002. Applicant wishes to express his appreciation to the Examiner for the indication of allowable subject matter (by Examiner P. Medley), and wishes to express his appprecation to Examiner T. Dougherty for the interview conducted on October 16, 2002 by the undersigned.

A petition for an extension of response time is attached.

The present response is intended to implement the conclusions of the interview and be fully responsive to all points of objection and rejection raised by the Examiner, and is believed to place the application in condition for allowance. Favorable reconsideration and allowance of the application are respectfully requested.

New claim 31 has been added to replace claim 24, now deleted. Claims 2, 6-16 and 25-30 have been amended. Therefore claims 2, 6-20, and 25-31 remain in the case.

The principal object of the present invention is to provide methods for designing SAW (surface acoustic wave) bandpass filters having a SAW inter-digital transducer (IDT) having a shape defining a ratio between its width and arrangement-periodicity.

Claims 2, 16, and 24-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Yatsuda. Yatsuda discloses in Fig. 2 a SAW device with input electrode 36 having increasing width over its length. Yatsuda discloses shapes that inherently control the dispersion effect.

As agreed upon in the interview of October 16, 2002, Yatsuda does not show a shaped electrode with a variable ratio between its width and arrangement-periodicity.

Therefore, new claim 31 has been added, as being a revised form of claim 24. New claim 31 defines the finger shape as a ratio between its width and its arrangement-periodicity, and also defines variable spacing between each of

said fingers. Yatsuda clearly makes no such reference, neither explicitly nor inherently. New claim 31 is therefore distinguished in terms of structure rather than function.

Claims 2, 6-15 and 28-29 previously dependent on cancelled claim 24, are now amended to depend from claim 31. Claims 16 and 25-27 have been amended with language paralleling new claim 31.

The amendments to claims 25 and 27 have been further modified to describe the SAW reflection coefficient. Support for this amendment can be found on p. 21, line 20 through p. 22, line 9. The amendment to claim 26 has been further modified to describe the SAW diffraction spreading. Support for this amendment can be found on p. 4, lines 18-29, page 20, lines 2-8 and p. 21, line 15-18. Claim 16 has been amended, and claims 17-20 were objected to as depending on a rejected base claim, but these claims now depend from amended claim 16.

Claim 30 was rejected under 35 USC §103(a) as being unpatentable over Yatsuda. Although the Examiner concedes that the reference does not disclose apodized electrodes, the Examiner takes Official Notice that it would have been well known in the art to use apodized electrodes for the purpose of weighting the output. Claim 30 has been amended to depend from the new claim 31, thus the rejection is traversed and should now be withdrawn.

In view of the foregoing remarks, all of the claims in the application are deemed to be allowable. Further reconsideration and allowance of the application is respectfully requested at an early date.

Respectfully submitted,

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MARKED-UP VERSION SHOWING CHANGES MADE

In the claims

Claim 2 has been amended as follows:

2. (Once amended) A transducer according to claim [24] 31, wherein said interdigitized finger is provided with a shape which controls the diffraction effect by either focusing, scattering or deflection of SAW beam resulting from the SAW velocity dispersion effect along the electrode fingers' lengths.

Claim 6 has been amended as follows:

6. (Once amended) A transducer according to claim [24] 31, wherein the shapes of said electrode fingers generally are not all identical.

Claim 7 has been amended as follows:

7. (Once amended) A transducer according to claim [24] 31, wherein said at least one interdigitized electrode finger has at least one edge shaped in the form of a curled bracket.

Claim 8 has been amended as follows:

8. (Once amended) A transducer according to claim [24] 31, wherein said at least one interdigitized electrode finger has at least one edge in the form of a rounded bracket.

Claim 9 has been amended as follows:

9. (Once amended) A transducer according to claim [24] 31, wherein said at least one interdigitized electrode finger has at least one edge in the form of a refracted line.

Claim 10 has been amended as follows:

10. (Once amended) A transducer according to claim [24] 31, wherein said at least a portion of at least one interdigitalized electrode finger has the shape of a rhombus.

Claim 11 has been amended as follows:

11. (Once amended) A transducer according to claim [24] 31, wherein said at least one interdigitized electrode finger has at least a portion of one edge in the form of a curled bracket.

Claim 12 has been amended as follows:

12. (Once amended) A transducer according to claim [24] 31, wherein said at least one interdigitized electrode finger has at least a portion of one edge in the form of a rounded bracket.

Claim 13 has been amended as follows:

13. (Once amended) A transducer according to claim [24] 31, wherein said at least one interdigitized electrode finger has at least a portion of one edge in the form of a refracted line.

Claim 14 has been amended as follows:

14. (Once amended) A transducer according to claim [24] 31, wherein said at least one interdigitized electrode finger has trapezoidal form.

Claim 15 has been amended as follows:

15. (Once amended) A transducer according to claim [24] 31, wherein said at least one interdigitized electrode finger has at least a portion of one edge in the form of a bell.

Claim 16 has been amended as follows:

16. (Once amended) A method for weighting a SAW interdigital transducer having a plurality of interdigitized electrode fingers comprising providing at least one internal surface edge of at least one interdigitized electrode finger with a shape <u>defining a ratio between its width and its arrangement-periodicity, and also defining variable spacing between each of said fingers, such that said ratio varies substantially along each of said fingers, said variable ratio inducing SAW velocity dispersion along said fingers, thereby providing a weighting mechanism to control weighting coefficients for achieving desired frequency characteristics of the IDT</u> [sufficiently incongruent with the overall shape of said SAW transducer, such that the SAW wave velocity is dispersed along the finger's length].

Claim 24 has been deleted.

Claim 25 has been amended as follows:

25. (Once amended) A method for weighting a SAW interdigital transducer having a plurality of interdigitized electrode fingers, said method comprising providing at least one internal surface edge of at least one interdigitized electrode finger with a shape <u>defining a ratio between its width and its arrangement-periodicity, and also defining variable spacing between each of said fingers, such that said ratio varies substantially along each of said fingers, said variable ratio inducing SAW reflection coefficient dispersion along said fingers, thereby providing a weighting mechanism to control weighting coefficients for achieving desired frequency characteristics of the IDT</u> [sufficiently incongruent with the overall shape of said SAW transducer, such that the SAW wave reflection coefficient is dispersed along the finger's length].

Claim 26 has been amended as follows:

26. (Once amended) A method for controlling the diffraction spreading of SAW beams in a SAW interdigital transducer having a plurality of interdigitized electrode fingers, using the SAW velocity dispersion effect comprising providing at least one internal surface edge of at least one interdigitized electrode finger with a shape defining a ratio between its width and its arrangement-periodicity, and also defining variable spacing between each of said fingers, such that said ratio varies substantially along each of said fingers, said variable ratio inducing SAW velocity dispersion along said fingers, thereby providing a mechanism to control the diffraction spreading for achieving desired frequency characteristics of the IDT [sufficiently incongruent with the overall shape of said SAW transducer, such that the SAW wave velocity is dispersed along the finger's length].

Claim 27 has been amended as follows:

27. (Once amended) A SAW interdigital transducer having a plurality of interdigitized electrode fingers, said transducer being weighted by having at least one internal surface edge of at least one of said interdigitized electrode fingers having a shape defining a ratio between its width and its arrangement-periodicity, and also defining variable spacing between each of said fingers, such that said ratio varies substantially along each of said fingers, said variable ratio inducing dispersion of both SAW velocity and SAW reflection coefficient along said fingers, thereby providing a weighting mechanism to control weighting coefficients for achieving desired frequency characteristics of the IDT [which induces a SAW velocity dispersion effect].

Claim 28 has been amended as follows:

28. (Once amended) A transducer according to claim [24] 31, wherein said transducer has a non-rectangular profile.

Claim 29 has been amended as follows:

29. (Once amended) A transducer according to claim [24] 31, wherein the distances between adjacent electrode finger pairs are varied.

Claim 30 has been amended as follows:

30. (Once amended) A transducer according to claim [24] 31, wherein said transducer is apodized by providing electrode fingers having varying lengths.

New claim 31 has been added as follows:

31. (New) A weighted SAW inter-digital transducer (IDT) having at least two internal electrode fingers shaped and arranged with a predetermined periodicity, each of said fingers having a shape defining a ratio between its width and its arrangement-periodicity, and also defining variable spacing between each of said fingers, such that said ratio varies substantially along each of said fingers, said variable ratio inducing SAW velocity dispersion along said fingers, thereby providing a weighting mechanism to control weighting coefficients for achieving desired frequency characteristics of the IDT.